



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/820,377	04/08/2004	Myong Guk Jeong	F-8211	7678
28107	7590	09/20/2007	EXAMINER	
JORDAN AND HAMBURG LLP 122 EAST 42ND STREET SUITE 4000 NEW YORK, NY 10168			SELLMAN, CACHET I	
		ART UNIT	PAPER NUMBER	
		1762		
		MAIL DATE		DELIVERY MODE
		09/20/2007		PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/820,377	JEONG ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Cachet I. Sellman	1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 08 April 2004.  
 2a) This action is FINAL.                    2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-11 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 1-11 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on 08 April 2004 is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____. _____   | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Art Unit: 1762

4. Claims 1, 2, 4 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heitkamp (US 4956217) in view of Hirst (US 4246311) and Statton et al. (US 4711910).

Heitkamp discloses a honeycomb core structure that is treated with silicate impregnating/coating to impart improved flame resistance and to reduce heat transmission and toxic emissions upon exposure of the core to direct or indirect heat (abstract). Heitkamp discloses that the polyester can be used as a base material for forming the core (column 2, lines 28-45). Heitkamp discloses that the substrate is dipped into the coating solution; then drained, dried in a forced air environment until the amount of free water is driven off. The process is repeated again until the target density is reached or the thickness of coating is obtained. The core is finally sliced into sheets and processed as normal core. Heitkamp discloses that the process can be used for block or presliced core sheets (column 3, lines 3-15). Curing is conducted in a temperature and pressure controlled environment, such as an autoclave. The curing temperature is in the range of 105-315°C (column 4, lines 58-68 – column 5, lines 1-4).

Heitkamp does not disclose rolling the polyester using a roller to promote permeation of the fire-retardant agent into the polyester floss; or removing excess agent by using a perforated roller as required by **claim 1**.

Hirst discloses a process for coating a woven polyester material to give it fire retardancy (abstract). The substrate is guided on a roll through a coating solution; and

Art Unit: 1762

passes between a pair of rubber pressure rollers which extracts a specific amount of the coating (the degree to which the coating solution is squeezed from the web is dependent on the pressure applied to the rollers); after leaving the rollers the substrate is passed through an oven and is typically in the oven for about 46-60 seconds. The actual time is dependant on coating solution, the amount of solids in the coating and the temperature of in the oven. After passing through the oven the material travels about several guide rollers; and passes through another oven to thoroughly cure the material; and then the web is passes through trimming equipment (column 3, lines 53-68 – column 4, lines 1-28).

It would have been obvious to one having ordinary skill in the art to modify the process of Heitkamp to include the step of using rollers to impregnate the coating into the film and pressure rollers to drain the coating as taught by Hirst. One would have been motivated to do so because both disclose coating polyester with a fire retardant agent and removing excess agent from the polyester. Heitkamp did not disclose how to coat the polyester or drain excess coating and Hirst disclosed the use of rollers to coat and drain the coating from the film therefore one would have a reasonable expectation of success is removing the excess coating.

As stated above the process steps of coating, draining and drying the substrate is repeated as required by **claim 2**.

Art Unit: 1762

As stated above, Hirst discloses passing the polyester through a trimming process after step e as required by **claim 4**. Hirst further discloses that the downward rollers can be adjusted to accommodate the desired thickness of the material (column 4, lines 15-21) as require by **claim 7**. Heitkamp discloses that the fire retardant agent contains 15-50 % by weight of solids (column 4, lines 13-15). However Heitkamp does not disclose the amount of fire-retardant additive or the type of additive that is used.

Statton et al. discloses forming retardant foams with reduced scorch and discoloration . The composition comprises 2-25% by weight based on 100 parts of solution of the flame retardant which can be an ester of phosphate based compound (column 2, lines 52-68-column 3 lines 1-2).

It would have been obvious to one having ordinary skill in the art to modify the process of Heitkamp in view of Hirst to include the composition of Statton et al. One would have been motivated to do so because both disclose processes for providing flame retardancy to substrates and Statton et al further discloses that the composition will result in reduced scorch and discoloration therefore one would have a reasonable expectation of success in forming the flame resistant core.

5. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Heitkamp (US 4956217) in view of Hirst (US 4246311) as applied to claim 1 and in further view of Heberger (US 4214035) .

The teachings of Heitkamp in view of Hirst as applied to claim 1 are as stated above.

Does not teach reversing the cut polyester floss by an angle of 90 degrees to allow the cut polyester floss to be vertically grained as required by **claim 3**.

Heberger discloses coating a polyester film with a coating using a roller. Heberger discloses that the film is biaxially stretched (stretched in the longitudinal direction) to impart strength and toughness to the film before coating (column 3, lines 63-68).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the process of Heitkamp in view of Hirst to include the step of biaxially stretching the film as taught by Heberger. One would have been motivated to do so because both disclose processes for coating a polyester film and Heberger further discloses that biaxially stretching the film imparts strength and toughness into the film therefore one would have a reasonable expectation of success in forming a tough fire retardant panel.

6. Claims 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heitkamp in view of Hirst as applied to claim 1 above and in further view of Venot (US 4115985) .

The teachings of Heitkamp in view of Hirst as applied to claim 1 are as stated above.

Heitkamp in view of Hirst does not teach using a ceramic heater or a hot air circulation heater to heat the polyester at a temperature of 150-250°C for 3-20 mins as required by **claims 10 and 11**.

Venot discloses that it is known in the art to heat treat a polyester yarn using hot air chambers (column 1, lines 61-64).

Heitkamp in view of Hirst does not teach heating for a time period of 3-20 mins however Hirst teaches that actual time is dependant on coating solution, the amount of solids in the coating and the temperature of in the oven. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the time within the claimed range through routine experimentation in order to cure the coating onto the substrate especially absent any criticality in using the claimed range.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the process of Heitkamp in view of Hirst to include the use of the hot air circulation heater of Venot. One would have been motivated to do so because both disclose processes for heat treating polyester yarn but Heitkamp in view of Hirst do not disclose how to heat the yarn and Venot further discloses that hot air

chambers can be used to heat treat polyester yarn therefore one would have a reasonable expectation of success in forming the fire retardant polyester core.

7. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Heitkamp in view of Hirst as applied to claim 1 above and in further view of Chakravarti et al. (US 5116682).

The teachings of Heitkamp in view of Hirst as applied to claim 1 are as stated above.

Heitkamp in view of Hirst does not teach using a microwave generating unit, a steam chamber, a hot air circulation chamber as the drying unit of step d as required by **claim 8**.

Chakravarti et al. discloses a process for coating polyester yarn to it anti-wicking (flam resistant). The process consists of coating the yarn then drying in an RF oven and then heat curing in a coating oven (abstract). Chakravarti et al. discloses that the drying and removal of water is an important step and can be performed using a RF dryer which operates like a microwave oven and results in rapid drying with little or no loss in fiber tensile properties and no fiber burnout occurs (column 3, lines 37-55). After drying the

Art Unit: 1762

yarn it is heat cured using an electrical contact oven. Chakravarti et al. further teaches that multiple ovens can be used in series (column 4, lines 1-17).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the process of Heitkamp in view of Hirst to include the RF dryer of Chakravarti et al. One would have been motivated to do so because both disclose processes for coating polyester with a flame resistant agent and Chakravarti et al. further discloses that the RF dryer results in rapid drying with little or no loss in fiber tensile properties therefore one would have a reasonable expectation of success in forming the flame resistant polyester.

8. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Heitkamp in view of Hirst and in further view of Chakravarti et al. as applied to claims 1 and 8 above and in further view of Barry et al. (US 6030559)

The teachings of Heitkamp in view of Hirst and in further view of Chakravarti as applied to claims 1 and 8 are as stated above.

Heitkamp in view of Hirst and in further view of Chakravarti does not teach steam vented using preheated air passing through a microwave region through an air blowing device and an air suction device as required by **claim 9**.

Barry et al. discloses that varying the temperature of hot air from vents, can help maintain the desired temperature (Figure 1; column 6, lines 56-65).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the process of Heitkamp in view of Hirst and in further view of Chakravarti to include venting the steam using preheated air of Barry et al. One would have been motivated to do so because both teach process for coating fibrous material and Barry et al. further discloses that venting will provide better control over the oven temperature therefore one would have a reasonable expectation of success in drying the polyester film with the coating.

9. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Heitkamp in view of Hirst as applied to claim 1 above and in further view of Lopez (US 2003/0224122 A1).

The teachings of Heitkamp in view of Hirst as applied to claim 1 are as stated above.

Heitkamp in view of Hirst does not teach using upper and lower nozzles to coat the polyester as required by **claim 5**.

Lopez discloses a process for applying a fire retardant to a substrate where the coating solution is sprayed onto the substrate using upper and lower nozzles (Figure 3,

Art Unit: 1762

[0033]). Lopez uses the nozzles because the use of just the rollers does not sufficiently coat the surface due to the low-viscosity of the coating [0042].

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the process of to include the nozzles of Lopez. One would have been motivated to do so because both disclose processes for applying a fire retardant to a substrate and Lopez further discloses that by using the nozzles the substrate is sufficiently coated therefore one would have a reasonable expectation of success in coating the polyester with the fire retardant coating.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cachet I. Sellman whose telephone number is 571-272-0691. The examiner can normally be reached on Monday through Friday, 7:00 - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on 571-272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1762

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Cachet I Sellman  
Examiner  
Art Unit 1762

cis

/William Phillip Fletcher III/  
Primary Examiner